

Application Serial No.: 10/796,733
Amendment and Response to April 4, 2007 Non-Final Office Action

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

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1. (currently amended) A method comprising:
acquiring a plurality of images of a first portion of a body undergoing substantially periodic motion, ~~each of the plurality of images associated with a respective time;~~
determining a correlation measure of image similarity between at least two of the plurality of images; and
determining, based on the measure of image similarity, that the at least two of the plurality of images represent substantially a same phase of the periodic motion ~~period of the periodic motion based on the respective times associated with the at least two of the plurality of images.~~
2. (original) A method according to Claim 1, wherein the plurality of images comprise three-dimensional cross-sectional images of the first portion of the body.
3. (original) A method according to Claim 2, wherein the images are acquired by a computed tomography scanner.
4. (original) A method according to Claim 2, wherein the images are acquired using a linear accelerator.
5. (original) A method according to Claim 1, wherein the plurality of images comprise projection images of the first portion of the body.
6. (original) A method according to Claim 5, wherein acquiring the plurality of images comprises:
acquiring the plurality of images at a first projection angle with respect to the body.

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7. (currently amended) A method according to Claim 6, wherein each of the plurality of images is associated with a respective time, further comprising:

determining a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

_____ acquiring a projection image of the portion of the body at a second projection angle with respect to the body, the projection image acquired at a time substantially equal to a time associated with one of the at least two of the plurality of images plus an integer multiple of the determined period.

8. (original) A method according to Claim 7, further comprising:

generating a combined projection image based on the at least two of the plurality of images; and

generating a second combined image based on the combined image and the projection image acquired at a second projection angle with respect to the body.

9. (currently amended) A method according to Claim 7, further comprising:

acquiring a second plurality of images of the portion of the body at a second projection angle with respect to the body, each of the second plurality of images associated with a respective time;

determining a measure of image similarity~~a correlation~~ between at least two of the second plurality of images; and

determining, based on the measure of image similarity, that the at least two of the second plurality of images represent substantially a same second phase~~the period of the periodic motion based on the respective times associated with the at least two of the second plurality of images.~~

10. (currently amended) A method according to Claim 5, further comprising:

generating a combined image corresponding to a ~~first~~the phase of the periodic motion based on the at least two of the plurality of images.

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11. (original) A method according to Claim 10, wherein acquiring the plurality of images comprises:

setting an x-ray tube current to less than or equal to half of a standard x-ray tube current used for imaging; and

acquiring the least two of the plurality of images based on the x-ray tube current.

12. (original) A method according to Claim 5, wherein the projection images are acquired by a C-arm.

13. (original) A method according to Claim 5, wherein the projection images are acquired using a linear accelerator.

14. (cancelled)

15. (currently amended) A method according to Claim 1, further comprising:
generating a combined image corresponding to ~~a first~~the phase of the periodic motion based on the at least two of the plurality of images.

16. (original) A method according to Claim 15, wherein acquiring the plurality of images comprises:

setting an x-ray tube current to less than or equal to half of a standard x-ray tube current used for imaging; and

acquiring the least two of the plurality of images based on the x-ray tube current.

17. (currently amended) A method according to Claim 1, wherein each of the plurality of images is associated with a respective time, further comprising:

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determining a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

acquiring an image of a second portion of the body at a time substantially equal to a time associated with one of the at least two of the plurality of images plus an integer multiple of the determined period.

18. (original) A method according to Claim 17, further comprising:
generating a combined image based on the at least two of the plurality of images; and
generating a second combined image based on the combined image and the image of the second portion of the body.

19. (currently amended) A method according to Claim 1, further comprising:
acquiring a second plurality of images of a second portion of the body, ~~each of the second plurality of images associated with a respective time;~~

determining a second measure of image similarity~~correlation~~ between at least two of the second plurality of images; and

determining, based on the second measure of image similarity, that the at least two of the second plurality of images represent substantially a same second phase~~the period of the periodic motion based on the respective times associated with the at least two of the second plurality of images.~~

20. (currently amended) A method according to Claim 1, wherein each of the plurality of images is associated with a respective time, further comprising:

determining a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

acquiring a second plurality of images of a second portion of the body, each of the second plurality of images associated with a respective time substantially equal to a time associated with one of the at least two of the plurality of images of the first portion of ~~a the~~ body plus an integer multiple of the determined period.

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21. (original) A method according to Claim 20, further comprising:
generating a combined image based on the at least two of the plurality of images;
generating a second combined image based on at least two of the second plurality of images, each of the at least two of the second plurality of images associated with a time substantially equal to a time associated with one of the at least two of the plurality of images of the first portion of a body plus an integer multiple of the determined period; and
generating a third combined image based on the combined image and the second combined image.

22. (currently amended) An apparatus comprising:
a memory storing processor-executable process steps; and
a processor in communication with the memory and operative in conjunction with the stored process steps to:
acquire a plurality of images of a first portion of a body undergoing substantially periodic motion, ~~each of the plurality of images associated with a respective time;~~
determine a measure of image similarity ~~correlation~~ between at least two of the plurality of images; and
determine, based on the measure of image similarity, that the at least two of the plurality of images represent substantially a same phase ~~a period of the periodic motion based on the respective times associated with the at least two of the plurality of images.~~

23. (original) An apparatus according to Claim 22, wherein the plurality of images comprise three-dimensional cross-sectional images of the first portion of the body.

24. (original) An apparatus according to Claim 23, wherein the images are acquired by a computed tomography scanner.

25. (original) An apparatus according to Claim 23, wherein the images are acquired using a linear accelerator.

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26. (original) An apparatus according to Claim 22, wherein the plurality of images comprise projection images of the first portion of the body.

27. (original) An apparatus according to Claim 26, wherein acquisition of the plurality of images comprises:

acquisition of the plurality of images at a first projection angle with respect to the body.

28. (currently amended) An apparatus according to Claim 27, wherein each of the plurality of images is associated with a respective time, and wherein the processor is further operative in conjunction with the stored process steps to:

determine a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

_____ acquire a projection image of the portion of the body at a second projection angle with respect to the body, the projection image acquired at a time substantially equal to a time associated with one of the at least two of the plurality of images plus an integer multiple of the determined period.

29. (original) An apparatus according to Claim 28, the processor further operative in conjunction with the stored process steps to:

generate a combined projection image based on the at least two of the plurality of images;
and

generate a second combined image based on the combined image and the projection image acquired at a second projection angle with respect to the body.

30. (currently amended) An apparatus according to Claim 28, the processor further operative in conjunction with the stored process steps to:

acquire a second plurality of images of the portion of the body at a second projection angle with respect to the body, each of the second plurality of images associated with a respective time;

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determine a measure of image similarity~~correlation~~ between at least two of the second plurality of images; and

determine, based on the measure of image similarity, that the at least two of the second plurality of images represent substantially a same second phase ~~the period~~ of the periodic motion ~~based on the respective times associated with the at least two of the second plurality of images~~.

31. (currently amended) An apparatus according to Claim 26, the processor further operative in conjunction with the stored process steps to:

generate a combined image corresponding to a ~~the~~first phase of the periodic motion based on the at least two of the plurality of images.

32. (original) An apparatus according to Claim 31, wherein acquisition of the plurality of images comprises:

setting of an x-ray tube current to less than or equal to half of a standard x-ray tube current used for imaging; and

acquisition of the least two of the plurality of images based on the x-ray tube current.

33. (original) An apparatus according to Claim 26, wherein the projection images are acquired by a C-arm.

34. (original) An apparatus according to Claim 26, wherein the projection images are acquired using a linear accelerator.

35. (cancelled)

36. (currently amended) An apparatus according to Claim 22, the processor further operative in conjunction with the stored process steps to:

generate a combined image corresponding to a ~~first~~the phase of the periodic motion based on the at least two of the plurality of images.

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37. (original) An apparatus according to Claim 36, wherein acquisition of the plurality of images comprises:

setting of an x-ray tube current to less than or equal to half of a standard x-ray tube current used for imaging; and

acquisition of the least two of the plurality of images based on the x-ray tube current.

38. (currently amended) An apparatus according to Claim 22, wherein each of the plurality of images is associated with a respective time, and wherein the processor is further operative in conjunction with the stored process steps to:

determine a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

acquire an image of a second portion of the body at a time substantially equal to a time associated with one of the at least two of the plurality of images plus an integer multiple of the determined period.

39. (original) An apparatus according to Claim 38, the processor further operative in conjunction with the stored process steps to:

generate a combined image based on the at least two of the plurality of images; and

generate a second combined image based on the combined image and the image of the second portion of the body.

40. (currently amended) An apparatus according to Claim 22, the processor further operative in conjunction with the stored process steps to:

acquire a second plurality of images of a second portion of the body; ~~each of the second plurality of images associated with a respective time;~~

determine a second measure of image similarity ~~correlation~~ between at least two of the second plurality of images; and

determine, based on the second measure of image similarity, that the at least two of the second plurality of images represent substantially a same second phase ~~the period of the periodic~~

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~~motion based on the respective times associated with the at least two of the second plurality of images.~~

41. (currently amended) An apparatus according to Claim 22, wherein each of the plurality of images is associated with a respective time, and wherein the processor is further operative in conjunction with the stored process steps to:

determine a period of the periodic motion based on the respective times associated with the at least two of the plurality of images; and

_____ acquire a second plurality of images of a second portion of the body, each of the second plurality of images associated with a respective time substantially equal to a time associated with one of the at least two of the plurality of images of the first portion of a the body plus an integer multiple of the determined period.

42. (original) An apparatus according to Claim 41, the processor further operative in conjunction with the stored process steps to:

generate a combined image based on the at least two of the plurality of images;

generate a second combined image based on at least two of the second plurality of images, each of the at least two of the second plurality of images associated with a time substantially equal to a time associated with one of the at least two of the plurality of images of the first portion of a body plus an integer multiple of the determined period; and

generate a third combined image based on the combined image and the second combined image.